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# VISUALISATION FOR NEW GENERATION USERS IN THE AGE OF THE ELECTRONIC BOOK

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## Abstract:

People are visual and respond to images. This is well known and has been exploited for eons by those wishing to sell product and promote ideas. A picture paints a thousand words. Book publishers have taken advantage of the response to images by putting time and effort into book covers. These help to sell the book to the reader. While we may say 'don't judge a book by its cover' in fact we frequently do exactly that. Unfortunately the move to electronic and online in the last decade has diminished the library's ability to take advantage of the visual image of the book when promoting new books to its readers and readers have lost the option to browse the shelf, finding related and useful material by 'chance'. Library users are losing the visual value of real books. However publishers have not stopped creating attractive and informative visual book covers, even for books that are largely sold in the eBook format. People have not changed, they still respond to images and book publishers still wish to make their books attractive to potential readers. At the same time the ability of library clients to consume images has increased remarkably thanks to faster computers, faster networks, mobile devices and smarter graphics.

The accelerating transition from paper books to electronic books provides an opportunity and not a threat. Libraries can take the opportunity and provide a traditional service in a new way to our clients and do so in the anytime, anywhere, any-device virtual environment familiar to our new generation users. The library can use its knowledge of its holdings, combined with licensed cover images and clever technology to present a visual experience that replicates the functionality of the paper book. In fact libraries could offer our readers a visualisation experience that we couldn't replicate in the physical world.

## Body text:

What is visualisation and how can it be used to enhance the library experience for new generation users in this age of the electronic book?

Visualisation refers to the use of graphics, diagrams, tables, pictures and other ways of using a visual approach to information that what would otherwise be difficult to grasp and interpret. The use of a pie chart to illustrate a set of data is a common example of 'visualisation' in its most basic form, representing tabular data in a graphic that makes the data easier to interpret. This simple type of visualisation has become the standard for presenting information that would be difficult to interpret if presented as numbers in a table but easy to grasp when visualised. Modern spread sheet software can produce such visual representations with a few clicks, even by the very young.

Visualisation has continued to develop. The ability to produce a sophisticated visualisation is becoming easier as the software available improves. A three dimensional rendering of a proposed building, a virtual walk through of a new house, a world map showing downloads of your research papers; these are now common. Visualisation is now an expected outcome of research analysis. The 2012 Horizon Report for Higher Education [Johnson, Adams & Cummins, 2012], which identifies and describes emerging technologies likely to have an impact over the next five years, mentions visualisation NOT as an emerging trend but in the context of

its application to other emerging technology uses. Visualisation is a well established part of the toolset in a wide range of disciplines and is becoming a commodity service.

The communication of ideas and information through the spoken and written word are at the heart of education and research. However the visual has always been a powerful complementary tool which can capture complexity with lucidity beyond the spoken or written word. Visualisation is powerful because people respond to visual images and can assimilate complex information in a visual form with greater speed than numbers and words. "From a cognitive point of view, pictures can illustrate, organize, explain, and improve memory." [Schnotz & Horz, 2010, p.143].

In addition to the educational and scholarly uses of visualisation it is well known that people have a response to images that influences and informs decisions that they make. The attractive, professional appearance of a shop front can entice the passerby to enter. Once through the door further visual clues can turn idle interest into serious purchase. Attractive images of food can spark the appetite; mannequins posed in attractive clothes can trigger a desire for a jacket and a scarf. The visual image can effortlessly grab attention, especially if a human face or figure is part of the image. Traders use the power of the visual image in the newspaper, in the shop window, in the shopping catalogue, in every effort to attract your attention and turn it into a transaction.

Publishers are no less aware of the selling power of a good image; in fact they have a greater need than most for the intrinsic sales value of an image. An image can represent complex and impenetrable information and books are a container full of information and a commodity that is difficult to sample without consuming. A loaf of bread can be smelt, lifted, touched and tasted. The first bite has the same flavour as the whole. A jacket can be touched and tried on in front of a mirror. The consumer can become familiar and comfortable with what they are buying. Books however are different to bread and clothing, yet the challenges are the same. Booksellers have found methods that work; the book review, the blurb, the published extracts, the comfortable seating for the browser and the smell of coffee, and above all else the attractive and enticing visual images of book covers. According to Yampbell [2005, p. 348] "many industry people argue that the cover is the foremost aspect of the book."

The book cover is a visualisation that attempts to capture the essence of a volume of words in a graphic form. Sometimes the most prominent aspect of a book cover is the name of the author, telling the consumer that this "loaf" was baked by the same hand as previous best selling efforts with the actual title given little prominence. Sometimes the book cover is a sign that the book fits within a certain popular genre. Sometimes the book cover is the first part of setting the context for the story. Sometimes the book cover is sober and plain as befits the serious content within. The book cover can entice and hint, luring the reader to pick up the book and read the blurb, sample the first chapter and then onward to the inevitable consumption. The visual clue of the cover has been at the front line of the publisher's arsenal for over a hundred years.

Publishers and book sellers have not been the only parties to take advantage of the book cover. Libraries have also deployed the value of a visual image in the promotion of books within their collection. Walk the aisles of a public library and you will see books that have been placed on display as new items, as part of a themed promotion or simply displayed like freshly baked bread showing off to the passing trade. Unlocking the collection has always been an important role of libraries. For readers the browsing of displays and the scanning of shelves has been an important method of discovery. For libraries the use of the cover image has been an essential tool for promotion, increasing circulation, meeting the needs of the borrower and improving return on investment.

The digital shift is now well upon us as print information is supplanted by electronic, online, digital alternatives. In the same way that electricity displaced gas for lighting and then went on to create a whole new industry in applications and appliances, so has the migration of information from print to electronic permeated all aspects of our lives and of our libraries, disrupting traditional communications and creating new industries. At the heart of the digital shift has been the exponential growth in the capacity of computing and connectivity. Computing power has increased exponentially, relentlessly following Moore's Law. We have more computing power available in our pocket than was available to NASA when last we visited the moon. Connectivity is a combination of the ability to connect and the volume of data that can be pushed and pulled through the connection. The combination of massive and cheap computing power and available connectivity is transforming our lives. We now talk about the internet of things, the internet everywhere, the always on generation, augmented reality (where virtual merges with real), the semantic web, the cloud, video on demand; all concepts that have emerged from the information revolution which has yet to peak.

The book or monograph is a particular type of communication between an author and a reader. What happens between, the act of publication, distribution and so forth, is important at a moment in time and subject to change. In reality no part of the process, writing, publishing, distributing and reading, no part is unchanged in the age of the information revolution. Yet the product is no less useful regardless of how it is published. The telling of a story or the exposition of theory hasn't changed. The experience of reading a novel on an eReader is now approaching and surpassing that of reading a paper book. Carrying a dozen books in a slim electronic device that slips into your handbag offers advantages for which there are no substitute in the paper and analogue world. However we shouldn't be seduced by the shiny objects of change and lose sight of the players that haven't changed, the author and the reader. A bookcase full of our favourite books is also a pleasure that isn't likely to be diminished by the digital shift. It is the content that matters, not the container.

In the midst of the digital shift books have neither gone away nor remained unchanged. The emergence of the electronic book as a rival for the paper book has finally gained momentum as display technology has developed and eReaders have matured. The second annual eBook survey conducted by the Library Journal shows a dramatic increase in the number of eBooks available, including in academic libraries [Miller, 2011]. The new eReader has the display, the massive computer power and the connectivity to have finally pushed electronic books over the tipping point.

In the academic library the digital shift has been just as inexorable and has now reached a tipping point where monograph purchasing is more likely to be electronic than paper and electronic is being actively preferred over print. This is partly a response to client demand and partly the shift in publication. It is likely that in time print will be the exception and probably not an option in many cases except as a one off print on demand. The library collection is rapidly becoming an online collection. As the collection reflects the digital shift the ability to connect our users to our collection has changed, improved in many ways and diminished in others.

There are many aspects to the impact of the digital shift on library services but I would focus on two traditional library activities that we are losing; book displays and shelf browsing. Book displays, as I have already indicated, are a traditional use of the visual image of the book as expressed through their cover art. Shelf browsing has been a traditional side effect of the collocation of books and the serendipitous discovery that can follow. Bookshops have long used collocation for the same purpose. The loss of shelf browsing isn't entirely due to the digital shift. New means of storing physical collections provide fast robotic retrieval for low use collections but not shelf browsing [Brodie & Martinelli, 2007]. The loss of shelf browsing has been lamented but is an inevitable consequence of the loss of book shelves in the digital shift, or is it?

In this time of transition, at this point of inflection, we can turn to our advantage the change caused by the digital shift.

Some things have not changed. In particular publishers still need to market their books and book covers show no sign of decline. Book covers still provide a vivid window into the book, a means of giving the reader a glimpse into the world inside the book. As books are increasingly available in electronic format and sold through online book shops the book cover increases in importance. This can be used to our advantage. We can respond to the digital shift by recreating the traditional services of book display and shelf browsing in the new online environment. We can use the power of computing and connectedness, the ability to display, to provide a similar, different and possibly better service than that which we have lost.

To replace what we have lost we need a virtual library where the user can 'walk' through the stacks, browse through the collection, be presented with a free flowing parade of book covers and be immersed in the collection in a way that echoes the experience of browsing a physical library but is so much more. We are not there yet but are moving in that direction. Data released at the London Book Fair provided a report on one month's traffic to a single eBook platform. It was reported that in that month "more than 5 million visitors viewed 146 million pages in 12.6 million visits" and that "more than 408,000 visitors each day viewed 11.6 pages and browsed the site for 9 minutes 34 seconds on average" [Price, 2012]. It is clear that browsing cover images is still valued by readers.

In this imagined virtual library the books are always on the shelf for browsing, never on loan, freed from format, blending physical and electronic, able to be selected and browsed at the click of a button or the swipe of a finger. In this virtual library finding is getting and browsing is personal. Do you like to browse by subject rather than call number? Do you want to only see on your shelf books of a certain age, format, and quality? The virtual library can oblige.

The new generation of users who are entering our institutions will have the display tools with powerful computing and connectedness, and an expectation that what they want can be found using their devices. They may not have the preconceptions of an older generation who could browse the new books on the display shelf and wander the stacks browsing the shelves for that serendipitous find that leads to another and another. However the new generation of users are familiar with large, very, very large, online catalogues of products presented with visual imagery. The online music store didn't destroy album covers and online market places make heavy use of their images for promotion, branding and attachment. Online booksellers use cover images in the same way. Academic publishers are no different.

So what are the challenges and how close are our academic libraries to the vision of a visual, browse-enabled virtual library?

The ingredients are mostly available.

The book cover, visualisation of the book within, is not in decline, is being produced for new books, including academic publishing, and is already in the digital environment ready to be used. There are commercial services that make book cover images available in real time. Libraries already use these book covers, though in a static, limited way.

The new generation of users have the technology in their hands to make use of the visual experience that we can provide. They have access to high speed, always available connectivity and fixed and mobile devices with superior display technology. Lippincott [2010, p. 29] says "students of today process information differently than earlier generations" and this is no surprise given their exposure to technology.

What are the challenges and how far along this path have we come?

Obtaining book covers for visualisation has some caveats. Book cover images are not universally available, especially for older books. When a cover image isn't available producing a dummy cover is an option, though this might be a convenient place holder rather than a satisfying visual experience. Another option is to simply show those titles for which a cover image is available, improving the browsing experience but reducing the completeness of the coverage. Image quality varies especially for larger images, and high quality display technology exposes poor quality images.

The distribution of computing and connectivity is not uniform, between users and between devices, and a highly engaging innovative visualisation may not work across all web browsers. The greatest disparity is between users who are on a university campus and using desktop machines and the high bandwidth provided by a university and those who are at a greater distance using moderate broadband and less capable machines. The choice is to reduce the effectiveness of the visualisation or to reduce the potential audience.

In addition to these challenges the ability to extract data from the library catalogue in real time can be an issue depending on the capabilities of the library system, the quality of the data and the expertise of library staff.

None of these challenges are insurmountable. Indeed in regard to the technical infrastructure, as has already been discussed, we are living in an age where computing and connectivity are still improving at an exponential rate. The passage of time will see the required computing and connectivity become ubiquitous. Tools for creating visualisations will continue to develop and mature. Library vendors may decide to invest in such high level visualisation. It is inevitable that a virtual library experience will be available to all.

As an early foray into this new territory, and using the ingredients that are available, the Curtin University Library created a virtual bookshelf of new books in 2011 [Curtin Library, 2011] and is moving towards virtual shelf browsing in 2012. Progress has been slow as technical difficulties emerge, particularly with the visualisation, and innovative solutions are found. Shelf browsing has the added complexity of needing real time creation plus all the challenges already mentioned. These first steps illustrate the potential for the virtual library of the future, one in which the traditional library experience of book displays and shelf browsing will be restored and enhanced for the benefit of the new generation of users.

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